

CLAIMS

1. A method for backside particle removal during a semiconductor manufacturing process, comprising the operations of:

defining cleaning sites on a backside of a wafer, wherein the cleaning sites are

5 regions of the backside of the wafer that physically contact a chuck during a semiconductor fabrication process; and

cleaning the backside of the wafer, the cleaning being primarily directed to the cleaning sites.

10 2. A method as recited in claim 1, further comprising the operation of aligning the cleaning sites with contact regions of the chuck, wherein the contact regions are regions of the chuck that physically contact the backside of the wafer during the semiconductor fabrication process.

15 3. A method as recited in claim 2, wherein the contact regions correspond to pin positions of a chuck pin array.

4. A method as recited in claim 2, wherein the contact regions correspond to wafer contact areas on a vacuum chuck.

5. A method as recited in claim 1, further comprising the operation of pre-programming the contact regions into a cleaning controller.

5 6. A method as recited in claim 1, wherein a laser is utilized to clean the backside of the wafer.

7. A method as recited in claim 1, wherein a megasonic wand is utilized to clean the backside of the wafer.

10 8. A system for backside particle removal during a semiconductor manufacturing process, comprising:

a chuck;

15 a cleaning controller that defines cleaning sites on a backside of a wafer, wherein the cleaning sites are regions of the backside of the wafer that physically contact the chuck during a semiconductor fabrication process; and

a site specific cleaning apparatus that is capable of cleaning the backside of the wafer, the cleaning being primarily directed to the cleaning sites.

9. A system as recited in claim 8, further comprising a wafer aligning apparatus that aligns the cleaning sites with contact regions of the chuck, wherein the contact regions are regions of the chuck that physically contact the backside of the wafer during the semiconductor fabrication process.

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10. A system as recited in claim 9, wherein the chuck includes a pin array that supports the wafer, and wherein the contact regions correspond to pin positions of the pin array.

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11. A system as recited in claim 9, wherein the chuck includes grooves for applying a vacuum to the backside of the wafer, and wherein the contact regions correspond to areas of the chuck outside the grooves.

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12. A system as recited in claim 8, wherein the site specific cleaning apparatus is a laser.

13. A system as recited in claim 8, wherein site specific cleaning apparatus is a megasonic wand.

14. A system as recited in claim 8, wherein the site specific cleaning apparatus is integrated with a lithographic stepper apparatus.

15. A method for backside particle removal during a semiconductor manufacturing process, comprising the operations of:

analyzing a backside of a wafer to obtain coordinates of specific particles located on the backside of the wafer; and

cleaning the backside of the wafer, the cleaning being primarily directed to the obtained coordinates of the specific particles.

16. A method as recited in claim 15, wherein the specific particles have a size greater than about 150 nm.

17. A method as recited in claim 15, wherein the obtained coordinates are provided to a cleaning controller that directs a site specific cleaning apparatus to clean the backside of the wafer at the obtained coordinates.

18. A method as recited in claim 17, wherein the site specific cleaning apparatus is a laser.

19. A method as recited in claim 17, wherein site specific cleaning apparatus is a megasonic wand.

5 20. A method as recited in claim 15, wherein the cleaning is further primarily directed to regions of the backside of the wafer that physically contact the chuck during a semiconductor fabrication process.